

Definitions

A

absolute value. The absolute value of a number is the magnitude of that number without considering the positive or negative sign.

acceptance test. The first official test of a farm milk tank, at a particular location, in which the tank is accepted as correct. This test applies to newly constructed tanks, relocated used tanks, and recalibrated tanks.

accurate. A piece of equipment is "accurate" when its performance or value—that is, its indications, its deliveries, its recorded representations, or its capacity or actual value, etc., as determined by tests made with suitable standards—conforms to the standard within the applicable tolerances and other performance requirements. Equipment that fails so to conform is "inaccurate." (Also see "correct.")

analog type. A system of indication or recording in which values are presented as a series of graduations in combination with an indicator, or in which the most sensitive element of an indicating system moves continuously during the operation of the device.

animal scale. A scale designed for weighing single heads of livestock.

apparent mass versus 8.0 g/cm^3 . The apparent mass of an object versus 8.0 g/cm^3 is the mass of material of density 8.0 g/cm^3 that produces exactly the same balance reading as the object when the comparison is made in air with a density of 1.2 mg/cm^3 at 20°C .

approval seal. A label, tag, stamped or etched impression, or the like, indicating official approval of a device. (Also see "security seal.")

atmospheric pressure. The average atmospheric pressure agreed to exist at the meter at various ranges of elevation, irrespective of variations in atmospheric pressure from time to time.

audit trail. An electronic count and/or information record of the changes to the values of the calibration or configuration parameters of a device.

automatic zero-setting mechanism. Automatic means provided to maintain zero balance indication without the intervention of an operator.

automatic bulk weighing system. A weighing system adapted to the automatic weighing of bulk commodities in successive drafts of predetermined amounts, automatically recording the no-load and loaded weight values and accumulating the net weight of each draft.

automatic hopper scale. One adapted to the automatic weighing of bulk commodity in successive drafts of pre-determined amounts. (This is not an "automatic-indicating scale" defined below.)

automatic temperature or density compensation. The use of integrated or ancillary equipment to obtain from the output of a volumetric meter an equivalent mass, or an equivalent liquid volume at a normal temperature of 70°F and absolute pressure of 14.696 lb/in^2 absolute.

automatic-indicating scale. One on which the weights of applied loads of various magnitudes are automatically indicated throughout all or a portion of the weighing range of the scale. (A scale that automatically weighs out commodity in pre-determined drafts, such as an automatic hopper scale, a packaging scale, and the like, is not an "automatic-indicating" scale.)

auxiliary indicator. Any indicator other than the master weight totalizer that indicates the weight of material determined by the scale.

axle-load scale. A scale permanently installed in a fixed location, having a load-receiving element specially adapted to determine the combined load of all wheels (1) on a single axle or (2) on a tandem axle of a highway vehicle.

B

badge. A metal plate affixed to the meter by the manufacturer showing the manufacturer's name, serial number and model number of the meter, and its rated capacity.

balance, zero-load. See "zero-load balance."

balance indicator. A combination of elements, one or both of which will oscillate with respect to the other, for indicating the balance condition of a nonautomatic indicating scale. The combination may consist of two indicating edges, lines, or points, or a single edge, line, or point and a graduated scale.

balancing mechanism. A mechanism (including a balance ball) that is designed for adjusting a scale to an accurate zero-load balance condition.

base pressure. The absolute pressure used in defining the gas measurement unit to be used, and is the gauge pressure at the meter plus an agreed atmospheric pressure.

basic time rate. The charge for time for all intervals except the initial interval.

basic tolerances. Basic tolerances are those tolerances on underregistration and on overregistration, or in excess and in deficiency, that are established by a particular code for a particular device under all normal tests, whether maintenance or acceptance. Basic tolerances include minimum tolerance values when these are specified. Special tolerances, identified as such and pertaining to special tests, are not basic tolerances.

basic distance rate. The charge for distance for all intervals except the initial interval.

batching meter. A device used for the purpose of measuring quantities of water to be used in a batching operation.

beam scale. One on which the weights of loads of various magnitudes are indicated solely by means of one or more weighbeam bars either alone or in combination with counterpoise weights.

beam. See "weighbeam."

bell prover. A calibrated cylindrical metal tank of the annular type with a scale thereon that, in the downward travel in a surrounding tank containing a sealing medium, displaces air through the meter being proved or calibrated.

belt-conveyor. An endless moving belt for transporting material from place to place.

belt-conveyor scale. A device that employs a weighing element in contact with a belt to sense the weight of the material being conveyed and the speed (travel) of the material, and integrates these values to produce total delivered weight.

belt-conveyor scale systems area. The scale area refers to the scale suspension, weigh idlers attached to the scale suspension, 5 approach (-) idlers, and 5 retreat (+) idlers.

bench scale. See "counter scale."

binary submultiples. Fractional parts obtained by successively dividing by the number 2. Thus, one-half, one-fourth, one-eighth, one-sixteenth, and so on, are binary submultiples.

C

calibration parameter. Any adjustable parameter that can affect measurement or performance accuracy and, due to its nature, needs to be updated on an ongoing basis to maintain device accuracy, e.g., span adjustments, linearization factors, and coarse zero adjustments.

car-wash timer. A timer used in conjunction with a coin-operated device to measure the time during which car-wash water, cleaning solutions, or waxing solutions are dispensed.

center-reading tank. One so designed that the gauge rod or surface gauge, when properly positioned for use, will be approximately in the vertical axis of the tank, centrally positioned with respect to the tank walls.

cereal grain and oil seeds. Agricultural commodities including, but not limited to, corn, wheat, oats, barley, flax, rice, sorghum, soybeans, peanuts, dry beans, safflower, sunflower, fescue seed, etc.

chart recorder. An element used with a belt-conveyor scale that continuously records the rate-of-flow of bulk material over the scale.

check rate. A rate of flow usually 20 percent of the capacity rate.

checkweighing scale. One used to verify predetermined weight within prescribed limits.

class of grain. Hard Red Winter Wheat as distinguished from Hard Red Spring Wheat as distinguished from Soft Red Winter Wheat, etc.

clear interval between graduations. The distance between adjacent edges of successive graduations in a series of graduations. If the graduations are "staggered," the interval shall be measured, if necessary, between a graduation and an extension of the adjacent graduation. (Also see "minimum clear interval.")

cleared. A taximeter is "cleared" when it is inoperative with respect to all fare indication, when no indication of fare or extras is shown and when all parts are in those positions in which they are designed to be when the vehicle on which the taximeter is installed is not engaged by a passenger.

coal-mine scale. One used at a coal mining operation for determining the basic wages of miners on a production basis.

cold-tire pressure. The pressure in a tire at ambient temperature.

computing type or computing type device. A device designed to indicate, in addition to weight or measure, the total money value of product weighed or measured, for one of a series of unit prices.

computing scale. One that indicates the money values of amounts of commodity weighed, at predetermined unit prices, throughout all or part of the weighing range of the scale.

concave curve. A change in the angle of inclination of a belt conveyor where the center of the curve is above the conveyor.

concentrated load capacity (CLC). A capacity rating of a vehicle, axle-load, or livestock scale, specified by the manufacturer, defining the maximum load concentration for which the weighbridge is designed. In the case of vehicle and axle-load scales, it is the maximum axle-load concentration (for a group of two axles with a centerline spaced 4 feet apart and an axle width of 8 feet) for which the weighbridge is designed as specified by the manufacturer. The concentrated load capacity rating is for both test and use.

configuration parameter. Any adjustable or selectable parameter for a device feature that can affect the accuracy of a transaction or can significantly increase the potential for fraudulent use of the device and, due to its nature, needs to be updated only during device installation or upon replacement of a component, e.g., division value (increment), sensor range, and units of measurement.

consecutive-car test train. A train consisting of cars weighed on a reference scale, then coupled consecutively and run over the coupled-in-motion railway track scale under test.

construction-material hopper scale. A scale adapted to weighing construction materials such as sand, gravel, cement, and hot oil.

contract sale. A sale where there is a written agreement stating the price as either a fixed price, a price above cost, or an adjustment from the posted price.

conventional scale. If the use of conversion tables is necessary to obtain a moisture content value, the moisture meter indicating scale is called "conventional scale." The values indicated by the scale are dimensionless.

conversion table. Any table, graph, slide rule, or other external device used to determine the moisture content from the value indicated by the moisture meter.

correction table. Any table, graph, slide rule, or other external device used to determine the moisture content from the value indicated by the moisture meter when the indicated value is altered by a parameter not automatically corrected for in the moisture meter (for example, temperature or test weight).

convex curve. A change in the angle of inclination of a belt conveyor where the center of the curve is below the conveyor.

conveyor stringers. Support members for the conveyor on which the scale and idlers are mounted.

correct. A piece of equipment is "correct" when, in addition to being accurate, it meets all applicable specification requirements. Equipment that fails to meet any of the requirements for correct equipment is "incorrect." (Also see "accurate.")

counter scale. One that, by reason of its size, arrangement of parts, and moderate nominal capacity, is adapted for use on a counter or bench. Sometimes called "bench scale."

counterbalance weight. One intended for application near the butt of a weighbeam for zero-load balancing purposes.

counterpoise weight. A slotted or "hanger" weight intended for application near the tip of the weighbeam of a scale having a multiple greater than 1.

coupled-in-motion railroad weighing system. A device and related installation characteristics consisting of (1) the associated approach trackage, (2) the scale (i.e., the weighing element, the load-receiving element, and the indicating element with its software), and (3) the exit trackage which permit the weighing of railroad cars coupled in motion.

crane scale. One with a nominal capacity of 5000 pounds or more designed to weigh loads while they are suspended freely from an overhead, track-mounted crane.

cryogenic liquid-measuring device. A system including a mechanism or machine of (a) the meter or mass flow type, or (b) a weighing type of device mounted on a vehicle, designed to measure and deliver cryogenic liquids in the liquid state. Means may be provided to indicate automatically, for one of a series of unit prices, the total money value of the liquid measured.

cryogenic liquids. Fluids whose normal boiling point is below 120 kelvin (-243 °F).

cubic foot, standard. That quantity of gas that occupies a volume of one cubic foot when under a pressure of 14.73 lb/in² absolute and at a temperature of 60 °F.

cubic foot, metered. That quantity of gas that occupies one cubic foot when under pressure and temperature conditions existing in the meter.

cubic-foot bottle. A metal bottle open at the lower end and so supported that it may be easily raised or lowered in a tank that contains a sealing medium. With the level of the sealing medium properly adjusted, the bottle, when lowered, will displace exactly one cubic foot of air upon coming to rest on the bottom of the tank. The marks on the bottle defining the cubic foot are the bottom of the lower neck and the gauge mark that partially surrounds the gauge glass in the upper neck.

cubic foot, gas. The amount of a cryogenic liquid in the gaseous state at a temperature of 70 °F and under a pressure of 14.696 lb/in² absolute that occupies one cubic foot. (See NTP.)

D

dairy-product-test scale. A scale used in determining the moisture content of butter and/or cheese or in determining the butterfat content of milk, cream, or butter.

decreasing-load test. A test for automatic-indicating scales only, wherein the performance of the scale is tested as the load is reduced.

deficiency. See "excess and deficiency."

digital type. A system of indication or recording of the selector type or one that advances intermittently in which all values are presented digitally, or in numbers. In a digital indicating or recording element, or in digital representation, there are no graduations.

direct sale. A sale in which both parties in the transaction are present when the quantity is being determined. An unattended automated or customer-operated weighing or measuring system is considered to represent the device/business owner in transactions involving an unattended device.

discharge line. A rigid pipe connected to the outlet of a measuring device.

discharge hose. A flexible hose connected to the discharge outlet of a measuring device or its discharge line.

discrimination (of an automatic-indicating scale). The value of the test load on the load-receiving element of the scale that will produce a specified minimum change of the indicated or recorded value on the scale.

dispenser. See motor-fuel device.

distributed-car test train. A train consisting of cars weighed first on a reference scale, cars coupled consecutively in groups at different locations within the train, then run over the coupled-in-motion railway track scale under test. The groups are typically placed at the front, middle, and rear of the train.

dry-hose type. A type of device in which it is intended that the discharge hose be completely drained following the mechanical operations involved in each delivery. (See "dry hose.")

dry hose. A discharge hose intended to be completely drained at the end of each delivery of liquid. (See "dry-hose type.")

dynamic monorail weighing system. A weighing system which employs hardware or software to compensate for dynamic effects from the load or the system that do not exist in a static weighing, in order to provide a stable indication. Dynamic factors may include shock or impact loading, system vibrations, oscillations, etc., and can occur even when the load is not moving across the load receiving element.

E

e_{\min} (minimum verification scale division). The smallest scale division for which a weighing element complies with the applicable requirements.

electronic link. An electronic connection between the weighing/load receiving or other sensing element and indicating element where one recognizes the other and neither can be replaced without calibration.

equal-arm scale. A scale having only a single lever with equal arms (that is, with a multiple of 1), equipped with two similar or dissimilar load-receiving elements (pan, plate, platter, scoop, or the like), one intended to receive material being weighed and the other intended to receive weights. There may or may not be a weighbeam.

event counter. A nonresettable counter that increments once each time the mode that permits changes to sealable parameters is entered and one or more changes are made to sealable calibration or configuration parameters of a device.

event logger. A form of audit trail containing a series of records where each record contains the number from the event counter corresponding to the change to a sealable parameter, the identification of the parameter that was changed, the time and date when the parameter was changed, and the new value of the parameter.

excess and deficiency. When an instrument or device is of such a character that it has a value of its own that can be determined, its error is said to be "in excess" or "in deficiency," depending upon whether its actual value is, respectively, greater or less than its nominal value. (See "nominal.")

Examples of instruments having errors "in excess" are: a linear measure that is too long; a liquid measure that is too large; and a weight that is "heavy."

Examples of instruments having errors "in deficiency" are: a lubricating-oil bottle that is too small; a vehicle tank compartment that is too small; and a weight that is "light."

extras. Charges to be paid by a passenger in addition to the fare, including any charge at a flat rate for the transportation of passengers in excess of a stated number and any charge for the transportation of baggage.

F

face. That side of a taximeter on which passenger charges are indicated.

face. That portion of a computing-type pump or dispenser which the actual computation of price per unit, delivered quantity, and total sale price. In the case of some electronic displays, this may not be an integral part of the pump or dispenser.

fare. That portion of the charge for the hire of a vehicle that is automatically calculated by a taximeter through the operation of the distance and/or time mechanism.

farm milk tank. A unit for measuring milk or other fluid dairy product, comprising a combination of (1) a stationary or portable tank, whether or not equipped with means for cooling its contents, (2) means for reading the level of liquid in the tank, such as a removable gauge rod or a surface gauge, and (3) a chart for converting level-of-liquid readings to volume; or such a unit in which readings are made on gauge rod or surface gauge directly in terms of volume. Each compartment of a subdivided tank shall, for purposes of this code, be construed to be a "farm milk tank."

feeding mechanism. The means for depositing material to be weighed on the belt conveyor.

fifth wheel. A commercially-available distance-measuring device which, after calibration, is recommended for use as a field transfer standard for testing the accuracy of taximeters and odometers on rented vehicles.

fifth-wheel test. A distance test similar to a road test, except that the distance traveled by the vehicle under test is determined by a mechanism known as a "fifth-wheel" that is attached to the vehicle and that independently measures and indicates the distance.

flag. A plate at the end of the lever arm or similar part by which the operating condition of a taximeter is controlled and indicated.

fractional bar. A weighbeam bar of relatively small capacity for obtaining indications intermediate between notches or graduations on a main or tare bar.

ft³/h. Cubic feet per hour.

G

gasoline gallon equivalent (GGE). Gasoline gallon equivalent (GGE) means 5.660 pounds of natural gas.

gasoline liter equivalent (GLE). Gasoline liter equivalent (GLE) means 0.678 kilograms of natural gas.

gauge pressure. The difference between the pressure at the meter and the atmospheric pressure (psi).

gauge rod. A graduated "dip-stick" type of measuring rod designed to be partially immersed in the liquid and to be read at the point where the liquid surface crosses the rod.

gauging. The process of determining and assigning volumetric values to specific graduations on the gauge or gauge rod that serve as the basis for the tank volume chart.

graduated interval. The distance from the center of one graduation to the center of the next graduation in a series of graduations. (Also see "value of minimum graduated interval.")

graduation. A defining line, or one of the lines defining the subdivisions of a graduated series. The term includes such special forms as raised or indented or scored reference "lines" and special characters such as dots. (Also see "main graduation" and "subordinate graduation.")

grain hopper scale. One adapted to the weighing of individual loads of varying amounts of grain.

grain moisture meter. Any device indicating either directly or through conversion tables and/or correction tables the moisture content of cereal grains and oil seeds. Also termed "moisture meter."

grain sample. That portion of grain or seed taken from a bulk of grain or seed to be bought or sold and used to determine the moisture content of the bulk.

grain-test scale. A scale adapted to weighing grain samples used in determining moisture content, dockage, weight per unit volume, etc.

gravity type. A type of device designed for discharge by gravity.

H

head pulley. The pulley at the discharge end of the belt conveyor. The power drive to drive the belt is generally applied to the head pulley.

hired. A taximeter is "hired" when it is operative with respect to all applicable indications of fare or extras. The indications of fare include time and distance where applicable unless qualified by another indication of "Time Not Recording" or an equivalent expression.

hopper scale. A scale designed for weighing bulk commodities whose load-receiving element is a tank, box, or hopper mounted on a weighing element. (Also, see "automatic hopper scale," "grain hopper scale," and "construction-material hopper scale.")

I

idler space. The center-to-center distance between idler rollers measured parallel to the belt.

idlers or idler rollers. Freely turning cylinders mounted on a frame to support the conveyor belt. For a flat belt, the idlers consist of one or more horizontal cylinders transverse to the direction of belt travel. For a troughed belt, the idlers consist of one or more horizontal cylinders and one or more cylinders at an angle to the horizontal to lift the sides of the belt to form a trough.

in-service light indicator. A light used to indicate that a timing device is in operation.

increasing-load test. The normal basic performance test for a scale in which observations are made as increments of test load are successively added to the load-receiving element of the scale.

increment. The value of the smallest change in value that can be indicated or recorded by a digital device in normal operation.

index of an indicator. The particular portion of an indicator that is directly utilized in making a reading.

indicating element. An element incorporated in a weighing or measuring device by means of which its performance relative to quantity or money value is "read" from the device itself as, for example, an index-and- graduated-scale combination, a weighbeam-and-poise combination, a digital indicator, and the like. (Also see "primary indicating or recording element.")

indicator, balance. See "balance indicator."

initial zero-setting mechanism. Automatic means provided to set the indication to zero at the time the instrument is switched on and before it is ready for use.

initial distance or time interval. The interval corresponding to the initial money drop.

interval, graduated. See "graduated interval."

interval, clear, between graduations. See "clear interval between graduations."

J

jewelers' scale. One adapted to weighing gems and precious metals.

K

kind of grain. Corn as distinguished from soybeans as distinguished from wheat, etc.

L

label. A printed ticket, to be attached to a package, produced by a printer that is a part of a prepackaging scale or that is an auxiliary device.

large-delivery device. Devices used primarily for single deliveries greater than 200 gallons, 2000 pounds, 20 000 cubic feet, 2 000 liters, or 2 000 kilograms.

laundry-drier timer. A timer used in conjunction with a coin-operated device to measure the period of time that a laundry drier is in operation.

liquefied petroleum gas. A petroleum product composed predominantly of any of the following hydro-carbons or mixtures thereof: propane, propylene, butanes (normal butane or isobutane), and butylenes.

liquefied petroleum gas vapor-measuring device. A system including a mechanism or device of the meter type, equipped with a totalizing index, designed to measure and deliver liquefied petroleum gas in the vapor state by definite volumes, and generally installed in a permanent location. The meters are similar in construction and operation to the conventional natural- and manufactured-gas meters.

liquefied petroleum gas liquid-measuring device. A system including a mechanism or machine of the meter type designed to measure and deliver liquefied petroleum gas in the liquid state by a definite quantity, whether installed in a permanent location or mounted on a vehicle. Means may or may not be provided to indicate automatically, for one of a series of unit prices, the total money value of the liquid measured.

liquid volume correction factor. A correction factor used to adjust the liquid volume of a cryogenic product at the time of measurement to the liquid volume at NBP.

liquid-fuel device. A device designed for the measurement and delivery of liquid fuels.

liquid-measuring device. A mechanism or machine designed to measure and deliver liquid by definite volume. Means may or may not be provided to indicate automatically, for one of a series of unit prices, the total money value of the liquid measured, or to make deliveries corresponding to specific money values at a definite unit price.

liquid fuel. Any liquid used for fuel purposes, that is, as a fuel, including motor fuel.

livestock scale. A scale equipped with stock racks and gates and adapted to weighing livestock standing on the scale platform.

load-receiving element. That element of a scale that is designed to receive the load to be weighed; for example, platform, deck, rail, hopper, platter, plate, scoop.

load cell. A device, whether electric, hydraulic, or pneumatic, that produces a signal proportional to the load applied.

load cell verification interval (v). The load cell interval, expressed in units of mass, used in the test of the load cell for accuracy classification.

loading point. The location at which material to be conveyed is applied to the conveyor.

low-flame test. A test simulating extremely low-flow rates such as caused by pilot lights.

lubricant device. A device designed for the measurement and delivery of liquid lubricants, including, but not limited to, heavy gear lubricants and automatic transmission fluids (automotive).

M

m³/h. Cubic meters per hour.

main-weighbeam elements. The combination of a main bar and its fractional bar, or a main bar alone if no fractional bar is associated with it.

main bar. A principal weighbeam bar, usually of relatively large capacity as compared with other bars of the same weighbeam. (On an automatic-indicating scale equipped with a weighbeam, the main weighbeam bar is frequently called the "capacity bar.")

main graduation. A graduation defining the primary or principal subdivisions of a graduated series. (Also see "graduation.")

manual zero-setting mechanism. Nonautomatic means provided to attain a zero balance indication by the direct operation of a control.

manufactured device. Any commercial weighing or measuring device shipped as new from the original equipment manufacturer.

mass flow meter. A device that measures the mass of a product flowing through the system. The mass measurement may be determined directly from the effects of mass on the sensing unit or may be inferred by measuring the properties of the product, such as the volume, density, temperature, or pressure, and displaying the quantity in mass units.

master meter test method. A method of testing milk tanks that utilizes an approved master meter system for measuring test liquid removed from or introduced into the tank.

master weight totalizer. An indicating element used with a belt conveyor scale to indicate the weight of material that was passed over the scale. The master weight totalizer is a primary indicating element of the belt-conveyor scale.

material test. The test of a belt-conveyor scale using material (preferably that for which the device is normally used) that has been weighed to an accuracy of 0.1 percent.

maximum capacity. The largest load that may be accurately weighed.

maximum cargo load. The maximum cargo load for trucks is the difference between the manufacturer's rated gross vehicle weight and the actual weight of the vehicle having no cargo load.

meter register. An observation index for the cumulative reading of the gas flow through the meter. In addition there are one or two proving circles in which one revolution of the test hand represents 1/2, 1, 2, 5, or 10 cubic feet, or 0.025, 0.05, 0.1, 0.2, or 0.25 cubic meter, depending on meter size. If two proving circles are present, the circle representing the smallest volume per revolution is referred to as the "leak-test circle."

metrological integrity (of a device). The design, features, operation, installation, or use of a device that facilitates (1) the accuracy and validity of a measurement or transaction, (2) compliance of the device with weights and measures requirements, or (3) the suitability of the device for a given application.

minimum capacity. The smallest load that may be accurately weighed. The weighing results may be subject to excessive error if used below this value.

minimum totalized load. The least amount of weight for which the scale is considered to be performing accurately.

minimum tolerances. Minimum tolerances are the smallest tolerance values that can be applied to a scale. Minimum tolerances are determined on the basis of the value of the minimum graduated interval or the nominal or reading face capacity of the scale. (See also definition for "basic tolerances".)

minimum clear interval. The shortest distance between adjacent graduations when the graduations are not parallel. (Also see "clear interval.")

minimum delivery. The least amount of weight that is to be delivered as a single weighing by a belt-conveyor scale system in normal use.

moisture content (wet basis). The mass of water in a grain or seed sample (determined by the reference method) divided by the mass of the grain or seed sample expressed as a percentage (%).

money-operated type. A device designed to be released for service by the insertion of money, or to be actuated by the insertion of money to make deliveries of product.

money drop. An increment of fare indication. The "initial money drop" is the first increment of fare indication following activation of the taximeter.

motor-fuel device or motor-fuel dispenser or retail motor-fuel device. A device designed for the measurement and delivery of liquids used as fuel for internal-combustion engines. The term "motor-fuel dispenser" means the same as "motor-fuel device"; the term "retail motor-fuel device" applies to a unique category of device (see also "retail device").

motor fuel. Liquid used as fuel for internal-combustion engines.

multi-interval scale. A scale having one weighing range which is divided into partial weighing ranges, each with different scale intervals, with the weighing range determined automatically according to the load applied, both on increasing and decreasing loads.

multi-revolution scale. An automatic-indicating scale having a nominal capacity that is a multiple of the reading-face capacity and that is achieved by more than one complete revolution of the indicator.

multiple cell application load cell. A load cell intended for use in a weighing system which incorporates more than one load cell. A multiple cell application load cell is designated with the letter "M" or the term "Multiple." (See also "single cell application load cell.")

multiple of a scale. In general, the multiplying power of the entire system of levers or other basic weighing elements. (On a beam scale, the multiple of the scale is the number of pounds on the load-receiving element that will be counterpoised by 1 pound applied to the tip pivot of the weighbeam.)

multiple range scale. A scale having two or more weighing ranges with different maximum capacities and different scale intervals for the same load receptor, each range extending from zero to its maximum capacity.

multiple-tariff taximeter. One that may be set to calculate fares at any one of two or more rates.

multiple. An integral multiple; that is, a result obtained by multiplying by a whole number. (Also see "multiple of a scale.")

N

natural gas. A gaseous fuel, composed primarily of methane, that is suitable for compression and dispensing into a fuel storage container(s) for use as an engine fuel.

NBP. Normal boiling point of a cryogenic liquid at 14.696 lb/in² absolute.

n_{max} (maximum number of scale divisions). The maximum number of scale divisions for which a main element or load cell complies with the applicable requirements. The maximum number of scale divisions permitted for an installation is limited to the lowest n_{max} marked on the scale indicating element, weighing element, or load cell.

no-load reference value. A positive weight value indication with no load in the load-receiving element (hopper) of the scale. (Used with automatic bulk-weighing systems and certain single draft, manually-operated receiving hopper scales installed below grade and used to receive grain.)

nominal. Refers to "intended" or "named" or "stated," as opposed to "actual." For example, the "nominal" value of something is the value that it is supposed or intended to have, the value that it is claimed or stated to have, or the value by which it is commonly known. Thus, "1-pound weight," "1-gallon measure," "1-yard indication," and "500-pound scale" are statements of nominal values; corresponding actual values may be greater or lesser. (See also "capacity of a scale".)

nominal capacity. The nominal capacity of a scale is (a) the largest weight indication that can be obtained by the use of all of the reading or recording elements in combination, including the amount represented by any removable weights

furnished or ordinarily furnished with the scale, but excluding the amount represented by any extra removable weights not ordinarily furnished with the scale, and excluding also the capacity of any auxiliary weighing attachment not contemplated by the original design of the scale, and excluding any fractional bar with a capacity less than 2-1/2 percent of the sum of the capacities of the remaining reading elements, or (b) the capacity marked on the scale by the manufacturer, whichever is less. (Also see "nominal capacity, batching scale," "nominal capacity, hopper scale.")

nominal capacity, batching scale. The nominal capacity of a batching scale is the capacity as marked on the scale by the scale manufacturer, or the sum of the products of the volume of each of the individual hoppers, in terms of cubic feet, times the weight per cubic foot of the heaviest material weighed in each hopper, whichever is less.

nominal capacity, hopper scale. The nominal capacity of a hopper scale is the capacity as marked on the scale by the scale manufacturer, or the product of the volume of the hopper in bushels or cubic feet times the maximum weight per bushel or cubic foot, as the case may be, of the commodity normally weighed, whichever is less.

nonretroactive. "Nonretroactive" requirements are enforceable after the effective date for:

1. devices manufactured within a State after the effective date;
2. both new and used devices brought into a State after the effective date; and
3. devices used in noncommercial applications which are placed into commercial use after the effective date.

Nonretroactive requirements are not enforceable with respect to devices that are in commercial service in the State as of the effective date or to new equipment in the stock of a manufacturer or a dealer in the State as of the effective date. (*Nonretroactive requirements are printed in italic type.*)

nose-iron. A slide-mounted, manually-adjustable pivot assembly for changing the multiple of a lever.

notes. A section included in each of a number of codes, containing instructions, pertinent directives, and other specific information pertaining to the testing of devices. Notes are primarily directed to weights and measures officials.

NTP. Normal temperature of 21 °C (70 °F) and pressure of 101.325 kPa (14.696 lb/in² absolute) respectively.

NTP density and volume correction factor. A correction factor used to adjust the liquid volume of a cryogenic product at the time of measurement to the gas equivalent at NTP.

O

odometer. A device that automatically indicates the total distance traveled by a vehicle. For the purpose of this code, this definition includes hub odometers, cable-driven odometers, and the distance-indicating or odometer portions of "speedometer" assemblies for automotive vehicles.

official grain samples. Grain or seed used by the official as the official transfer standard from the reference standard method to test the accuracy and precision of grain moisture meters.

official with statutory authority. The representative of the jurisdiction(s) responsible for certifying the accuracy of the device.

operating tire pressure. The pressure in a tire immediately after a vehicle has been driven for at least 5 miles or 8 kilometers.

over-and-under indicator. An automatic-indicating element incorporated in or attached to a scale and comprising an indicator and a graduated scale with a central or intermediate "zero" graduation and a limited range of weight graduations on either side of the zero graduation, for indicating weights greater than and less than the predetermined values for which other elements of the scale may be set. (A scale having an over-and-under indicator is classed as an automatic-indicating scale.)

overregistration and underregistration. When an instrument or device is of such a character that it indicates or records values as a result of its operation, its error is said to be in the direction of overregistration or underregistration, depending upon whether the indications are, respectively, greater or less than they should be.

Examples of devices having errors of "over-registration" are: a fabric-measuring device that indicates more than the true length of material passed through it; and a liquid-measuring device that indicates more than the true amount of the liquid delivered by the device.

Examples of devices having errors of "under-registration" are: a meter that indicates less than the true amount of product that it delivers; and a weighing scale that indicates or records less than the true weight of the applied load.

P

parallax. The apparent displacement, or apparent difference in height or width, of a graduation or other object with respect to a fixed reference, as viewed from different points.

parking meter. A coin-operated device for measuring parking time for vehicles.

passenger vehicles. Vehicles such as automobiles, recreational vehicles, limousines, ambulances, and hearses.

performance requirements. Performance requirements include all tolerance requirements and, in the case of nonautomatic-indicating scales, sensitivity requirements (SR). (See also "tolerance" and "sensitivity requirement".)

point-of-sale system. An assembly of elements including a weighing or measuring element, an indicating element, and a recording element (and may also be equipped with a "scanner") used to complete a direct sales transaction.

poise. A movable weight mounted upon or suspended from a weighbeam bar and used in combination with graduations, and frequently with notches, on the bar to indicate weight values. (A suspended poise is commonly called a "hanging poise".)

portable cubic-foot standard. A gasometer of the annular type, the bell being sealed with a light oil, the amount of its rise (and consequently of the volume of air or gas being measured) being under absolute control so that an exact cubic foot can be delivered.

postal scale. A scale (usually a computing scale) designed for use to determine shipping weight or delivery charges for letters or parcels delivered by the United States Postal Service or private shipping companies. A weight classifier may be used as a postal scale.

prepackaging scale. A computing scale specially designed for putting up packages of random weights in advance of sale.

prescription scale. A scale or balance adapted to weighing the ingredients of medicinal and other formulas prescribed by physicians and others and used or intended to be used in the ordinary trade of pharmacists.

pressure type (device). A type of device designed for operation with the liquid under artificially produced pressure.

primary indicating or recording elements. The term "primary" is applied to those principal indicating (visual) elements and recording elements that are designed to, or may, be used by the operator in the normal commercial use of a device. The term "primary" is applied to any element or elements that may be the determining factor in arriving at the sale representation when the device is used commercially. (Examples of primary elements are the visual indicators for meters or scales not equipped with ticket printers or other recording elements and both the visual indicators and the ticket printers or other recording elements for meters or scales so equipped.) The term "primary" is not applied to such auxiliary elements as, for example, the totalizing register or predetermined-stop mechanism on a meter or the means for producing a running record of successive weighing operations, these elements being supplementary to those that are the determining factors in sales representations of individual deliveries or weights. (See "indicating element" and "recording element".)

prover oil. A light oil of low vapor pressure used as a sealing medium in bell provers, cubic-foot bottles, and portable cubic-foot standards.

proving indicator. The test hand or pointer of the proving or leak-test circle on the meter register or index.

prover test method. A method of testing milk tanks that utilizes approved volumetric prover(s) for measuring the test liquid removed from or introduced into the tank.

R

"r" factor. A computation for determining the suitability of a vehicle scale for weighing vehicles with varying axle configurations. The factor was derived by dividing the weights in FHWA Federal Highway Bridge Gross Weight Table B by 34 000 lbs. (The resultant factors contained in Table UR.3.2.1.)

radio frequency interference (RFI). Radio frequency interference is a type of electrical disturbance that, when introduced into electronic and electrical circuits, may cause deviations from the normally expected performance.

ranges, weight. See "weight ranges."

rated scale capacity. That value representing the weight that can be delivered by the device in one hour.

rated capacity. The rate of flow in cubic meters per hour of a hydrocarbon gas vapor-measuring device as recommended by the manufacturer. This rate of flow should cause a pressure drop across the meter not exceeding 1/2-inch water column.

ratio test. A test to determine the accuracy with which the actual multiple of a scale agrees with its designed multiple. This test is used for scales employing counter-poise weights and is made with standard test weights substituted in all cases for the weights commercially used on the scale. (It is appropriate to use this test for some scales not employing counterpoise weights.)

reading-face capacity. The largest value that may be indicated on the reading face, exclusive of the application or addition of any supplemental or accessory elements.

reading face. That portion of an automatic-indicating weighing or measuring device that gives a visible indication of the quantity weighed or measured. A reading face may include an indicator and a series of graduations or may present values digitally, and may also provide money-value indications.

recorded representation. The printed, embossed, or other representation that is recorded as a quantity by a weighing or measuring device.

recording element. An element incorporated in a weighing or measuring device by means of which its performance relative to quantity or money value is permanently recorded on a tape, ticket, card, or the like, in the form of a printed, stamped, punched, or perforated representation.

recording scale. One on which the weights of applied loads may be permanently recorded on a tape, ticket, card, or the like in the form of a printed, stamped, punched, or perforated representation.

reference weight car. A railroad car weighed on a scale for temporary use as a mass standard over a short period of time (typically, the time required to test one scale) as part of a test train.

Note: A test weight car that is representative of the types of cars typically weighed on the scale under test may be used wherever reference weight cars are specified.

remanufactured device. A device that is disassembled, checked for wear, parts replaced or fixed, reassembled and made to operate like a new device of the same type.

remanufactured element. An element that is disassembled, checked for wear, parts replaced or fixed, reassembled and made to operate like a new element of the same type.

remote configuration capability. The ability to adjust a weighing or measuring device or change its sealable parameters from or through some other device that is not itself necessary to the operation of the weighing or measuring device or is not a permanent part of that device.

repaired device. A device to which work is performed that brings the device back into proper operating condition.

repaired element. An element to which work is performed that brings the element back into proper operating condition.

retail device. A device used for:

single deliveries of less than 100 gallons,

retail deliveries of motor fuels to individual highway vehicles, or

single deliveries of liquefied petroleum gas for domestic use and liquefied petroleum gas or liquid anhydrous ammonia for nonresale use.

retroactive. "Retroactive" requirements are enforceable with respect to all equipment. Retroactive requirements are printed herein in upright Roman type. (Also see "nonretroactive.")

road test. A distance test, over a measured course, of a complete taximeter assembly when installed on a vehicle, the mechanism being actuated as a result of vehicle travel.

rolling circumference. The rolling circumference is the straight line distance traveled per revolution of the wheel (or wheels) that actuates the taximeter or odometer. If more than one wheel actuates the taximeter or odometer, the rolling circumference is the average distance traveled per revolution of the actuating wheels.

S

scale division, number of (n). Quotient of the capacity divided by the value of the verification scale division:

$$n = \frac{\text{Capacity}}{e}$$

scale division, value of (d). The value of the scale division, expressed in units of mass, is the smallest subdivision of the scale for analog indication or the difference between two consecutively indicated or printed values for digital indication or printing. (Also see "verification scale division".)

scale section. A part of a vehicle, axle-load, livestock, or railway track scale consisting of two main load supports, usually transverse to the direction in which the load is applied.

scale. See specific type of scale.

seal. See "approval seal," "security seal".

section capacity. The section capacity of a scale is the maximum live load that may be divided equally on the load pivots or load cells of a section.

section test. A shift test in which the test load is applied over individual sections of the scale. This test is conducted to disclose the weighing performance of individual sections, since scale capacity test loads are not always available and loads weighed are not always distributed evenly over all main load supports.

security means. A method used to prevent access by other than qualified personnel, or to indicate that access has been made to certain parts of a scale that affect the performance of the device.

security seal. A uniquely identifiable physical seal, such as a lead-and-wire seal or other type of locking seal, a pressure-sensitive seal sufficiently permanent to reveal its removal, or similar apparatus attached to a weighing or measuring device for protection against or indication of access to adjustment. (See also "approval seal".)

selector-type. A system of indication or recording in which the mechanism selects, by means of a ratchet- and-pawl combination or by other means, one or the other of any two successive values that can be indicated or recorded.

semi-automatic zero-setting mechanism. Automatic means provided to attain a direct zero balance indication requiring a single initiation by an operator.

sensitivity requirement (SR). A performance requirement for a nonautomatic-indicating scale; specifically, the minimum change in the position of rest of the indicating element or elements of the scale in response to the increase or decrease, by a specified amount, of the test load on the load-receiving element of the scale.

sensitivity (of a nonautomatic-indicating scale). The value of the test load on the load-receiving element of the scale that will produce a specified minimum change in the position of rest of the indicating element or elements of the scale.

shift test. A test intended to disclose the weighing performance of a scale under off-center loading.

side. That portion of a pump or dispenser which faces the consumer during the normal delivery of product.

simulated-road test. A distance test during which the taximeter or odometer may be actuated by some means other than road travel. The distance traveled is either measured by a properly calibrated roller device or computed from rolling circumference and wheel-turn data.

simulated test. A test using artificial means of loading the scale to determine the performance of a belt- conveyor scale.

single cell application load cell. A load cell intended for use in a weighing system which incorporates one or more load cells. A single cell application load cell is designated with the letter "S" or the term "Single." (See also "multiple cell application load cell.")

single-tariff taximeter. One that calculates fares at a single rate only.

skirting. Stationary side boards or sections of belt conveyor attached to the conveyor support frame or other stationary support to prevent the bulk material from falling off the side of the belt.

slow-flow meter. A retail device designed for the measurement, at very slow rates (less than 10 gallons per hour), of liquid fuels at individual domestic installations.

small-delivery device. Any device other than a large-delivery device.

span (structural). The distance between adjoining sections of a scale.

specification. A requirement usually dealing with the design, construction, or marking of a weighing or measuring device. Specifications are directed primarily to the manufacturers of devices.

static monorail weighing system. A weighing system in which the load being applied is stationary during the weighing operation.

strain-load test. The test of a scale beginning with the scale under load and applying known test weights to determine accuracy over a portion of the weighing range. The scale errors for a strain-load test are the errors observed for the known test loads only. The tolerances to be applied are based on the known test load used for each error that is determined.

subordinate graduation. Any graduation other than a main graduation. (See also "graduation".)

subsequent distance or time intervals. The intervals corresponding to money drops following the initial money drop.

surface gauge. A combination of (1) a stationary indicator, and (2) a movable, graduated element designed to be brought into contact with the surface of the liquid from above.

T

tail pulley. The pulley at the opposite end of the conveyor from the head pulley.

take-up. A device to provide sufficient tension in a conveyor belt so that the belt will be positively driven by the drive pulley. A counter-weighted take-up consists of a pulley free to move in either the vertical or horizontal direction with dead weights applied to the pulley shaft to provide the tension required.

tare-weighbeam elements. The combination of a tare bar and its fractional bar, or a tare bar alone if no fractional bar is associated with it.

tare mechanism. A mechanism (including a tare bar) designed for determining or balancing out the weight of packaging material, containers, vehicles, or other materials that are not intended to be included in net weight determinations.

taximeter. A device that automatically calculates, at a predetermined rate or rates, and indicates the charge for hire of a vehicle.

testing. An operation consisting of a series of volumetric determinations made to verify the accuracy of the volume chart that was developed by gauging.

test liquid. The liquid used during the test of a device.

test chain. A device used for simulated tests consisting of a series of rollers or wheels linked together in such a manner as to assure uniformity of weight and freedom of motion to reduce wear, with consequent loss of weight, to a minimum.

test train. A train consisting of or including reference weight cars and used to test coupled-in-motion railway track scales. The reference weight cars may be placed consecutively or distributed in different places within a train.

test weight car. A railroad car designed to be a stable mass standard to test railway track scales. The test weight car may be one of the following types: a self-contained composite car, a self-propelled car, or a standard rail car.

time recorder. A clock-operated mechanism designed to record the time of day. Examples of time recorders are those used in parking garages to record the "in" and "out" time of day for parked vehicles.

timing device. A device used to measure the time during which a particular paid-for service is dispensed. Examples of timing devices are laundry driers, car-wash timers, parking meters, and parking-garage clocks and recorders.

tolerance. A value fixing the limit of allowable error or departure from true performance or value. (See also "basic tolerances".)

training idlers. Idlers of special design or mounting intended to shift the belt sideways on the conveyor to assure the belt is centered on the conveying idlers.

transfer standard. A measurement system designed for use in proving and testing cryogenic liquid-measuring devices.

tripper. A device for unloading a belt conveyor at a point between the loading point and the head pulley.

U

uncoupled-in-motion railroad weighing system. A device and related installation characteristics consisting of (1) the associated approach trackage; (2) the scale (i.e., the weighing element, the load-receiving element, and the indicating element with its software); and (3) the exit trackage which permit the weighing of railroad cars uncoupled in motion.

underregistration. See "overregistration and "underregistration."

unit price. The price at which the product is being sold and expressed in whole units of measurement.

unit weight. One contained within the housing of an automatic-indicating scale and mechanically applied to and removed from the mechanism. The application of a unit weight will increase the range of automatic indication, normally in increments equal to the reading-face capacity.

unit train. A unit train is defined as a number of contiguous cars carrying a single commodity from one consignor to one consignee. The number of cars is determined by agreement among the consignor, consignee, and the operating railroad.

user requirement. A requirement dealing with the selection, installation, use, or maintenance of a weighing or measuring device. User requirements are directed primarily to the users of devices.

usual and customary. Commonly or ordinarily found in practice or in the normal course of events and in accordance with established practices.

V

value of minimum graduated interval. The value represented by the interval from the center of one graduation to the center of the succeeding graduation. Also, the increment between successive recorded values. (See also "graduated interval".)

vehicle on-board weighing system. A weighing system designed as an integral part of or attached to the frame, chassis, lifting mechanism, or bed of a vehicle, trailer, industrial truck, industrial tractor, or forklift truck.

vehicle scale. A scale adapted to weighing highway, farm, or other large industrial vehicles (except railroad freight cars), loaded or unloaded.

verification scale division, value of (e). A value, expressed in units of weight (mass) and specified by the manufacturer of a device, by which the tolerance values and the accuracy class applicable to the device are determined. The verification scale division is applied to all scales,

in particular to ungraduated devices since they have no graduations. The verification scale division, *e*, may be different from the displayed scale division, *d*, for certain other devices used for weight classifying or weighing in predetermined amounts, and certain other Class I and II scales.

visible type. A type of device in which the measurement takes place in a see-through glass measuring chamber.

v_{min} (minimum load cell verification interval). The smallest load cell verification interval, *expressed in units of mass* into which the load cell measuring range can be divided.

W

weighbeam. An element comprising one or more bars, equipped with movable poises or means for applying counterpoise weights or both.

weighing element. That portion of a scale that supports the load-receiving element and transmits to the indicating element a signal or force resulting from the load applied to the load-receiving element.

weighment. A single complete weighing operation.

weight, unit. See "unit weight."

weight classifier. A digital scale that rounds weight values up to the next scale division. These scales usually have a verification scale division, *e*, that is smaller than the displayed scale division.

weight ranges. Electrical or electro-mechanical elements incorporated in an automatic indicating scale through the application of which the range of automatic indication of the scale is increased, normally in increments equal to the reading-face capacity.

wet basis. See "moisture content (wet basis)."

wet hose. A discharge hose intended to be full of liquid at all times. (See also "wet-hose type".)

wet-hose type. A type of device designed to be operated with the discharge hose full of liquid at all times. (See also "wet hose".)

wheel-load weighers. Compact, self-contained, portable weighing elements specially adapted to determining the wheel loads or axle loads of vehicles on highways for the enforcement of highway weight laws only.

wholesale device. Any device other than a retail device. (See also "retail device".)

wing pulley. A pulley made of widely spaced metal bars in order to set up a vibration to shake loose material off the underside (return side) of the belt.

Z

zero-load balance. A correct weight indication or representation of zero when there is no load on the load-receiving element. (See also "zero-load balance for an automatic-indicating scale," "zero-load balance for a nonautomatic-indicating scale," "zero-load balance for a recording scale".)

zero-load balance, automatic-indicating scale. A condition in which the indicator is at rest at, or oscillates through approximately equal arcs on either side of, the zero graduation.

zero-load balance, nonautomatic-indicating scale. A condition in which (a) the weighbeam is at rest at, or oscillates through approximately equal arcs above and below, the center of a trig loop; (b) the weighbeam or lever system is at rest at, or oscillates through approximately equal arcs above and below, a horizontal position or a position midway between limiting stops; or (c) the indicator of a balance indicator is at rest at, or oscillates through approximately equal arcs on either side of, the zero graduation.

zero-load balance for a recording scale. A condition in which the scale will record a representation of zero load.

zero-setting mechanism. Means provided to attain a zero balance indication with no load on the load-receiving element. Three types of these mechanisms are:

manual zero-setting mechanism. Nonautomatic means provided to attain a zero balance indication by the direct operation of a control.

semiautomatic zero-setting mechanism. Automatic means provided to attain a direct zero balance indication requiring a single initiation by an operator.

automatic zero-setting mechanism. Automatic means provided to maintain zero balance indication without the intervention of an operator.

zone of uncertainty. The zone between adjacent increments on a digital device in which the value of either of the adjacent increments may be displayed.